***Unit 1: Alchemy*** Name:

***Lessons 17-24 Test Review***  Date: Pd:

In order to study for the test, you should:

* Review all classroom outlines for Lessons 17-24
* Review all vocabulary terms which are located at the end of each lesson in a list
* Look over all activity worksheets done for Lessons 17-24
* Read the lesson summaries found at the end of each lesson
* Review quizzes and homework assignments for Lessons 17-24

The test will include both objective and free response portions. If you are absent on the day of the exam, please be ready to take it immediately upon your return.

The following are some sample review questions for each lesson. This worksheet is a selected review

for Lessons 17-24 and does NOT cover all material for the test. Also, be aware that you should review

the concepts learned in these lessons but will also be required to *apply* this knowledge on the test.

**LESSON 17: Flame Tests**

1. What is the purpose of a flame test?

2. LiCl produces a red flame. Which part of the compound causes the color – the Li or the Cl?

3. Describe how the electrons in a metal atom produce different colors of lights.

4. Use the table on page 88 to predict the flame colors for:

a) Ca(OH)2 b) KBr c) Na3PO4

**LESSON 18: Valence and Core Electrons**

5. On the periodic table, the group numbers of main-group elements indicate the number of:

6. On the periodic table, the period numbers indicate the number of:

7. How many valence electrons does each of the following elements contain?

a) Ca b) Ga c) P

d) Si e) Br f) K

8. How many electron shells do each of the elements in #7 contain?

a) b) c)

d) e) f)

9. Draw a shell model for sulfur, S. It has \_\_\_\_ valence electrons and \_\_\_\_ core electrons.

10. *Why* do elements in the same group have similar properties?

**LESSON 19: Ions**

11. *Why* are noble gases so stable?

12. What is the difference between a cation and an anion?

13. What are the ions formed by:

a) Ca b) B c) P d) Cl

e) Ba f) N

14. Is there a pattern on the periodic table for ion charges?

**LESSON 20: Ionic Compounds**

15. a) Do metals form cations or anions? Provide 2 examples.

b) Do nonmetals form cations or anions? Provide 2 examples.

16. What is the rule of zero charge?

17. Write the formulas for the compound created from each pair of elements/ions.

a) Na+ and O2- c) calcium and sulfur

b) Sr2+ and N3- d) Be and Cl

18. How many total valence electrons are in the following compounds?

a) CaCl2 b) KF c) BeO d) K2O

**LESSON 21: Formulas for Ionic Compounds**

19. Write the chemical formula **AND** name for the compound created from each pair of elements:

a) potassium and chlorine c) oxygen and magnesium

b) sodium and sulfur d) aluminum and fluorine

20. For each compound below, write the cation and anion with the appropriate charge. Then write the chemical formula.

a) potassium oxide b) magnesium nitride

c) beryllium fluoride d) sodium bromide

**LESSON 22: Polyatomic Ions**

21. What is the difference between polyatomic and monatomic ions?

22. Write the formulas for the following polyatomic ions.

|  |  |
| --- | --- |
| NAME | FORMULA |
| carbonate |  |
| hydroxide |  |
| ammonium |  |
| phosphate |  |
| sulfate |  |
| nitrate |  |

23. Write the formulas for the compounds created from each pair:

a) Na+ and SO42- c) lithium and phosphate

b) Mg2+ and PO43- d) magnesium and hydroxide

24. Write the formulas of the following compounds:

a) sodium nitrate c) ammonium chloride

b) ammonium phosphide d) aluminum carbonate

25. Name the following compounds:

a) MgCO3 b) Li2SO4 c) AlPO4

**LESSON 23: Transition Metal Chemistry**

\*\*\*Transition metals form cations. These charges cannot be determined from the periodic table so they are indicated by Roman numerals in the chemical name.

Example: copper (II) chloride, CuCl2 🡪 Copper has a charge of +2

iron (III) oxide, Fe2O3 🡪 Iron has a charge of +3

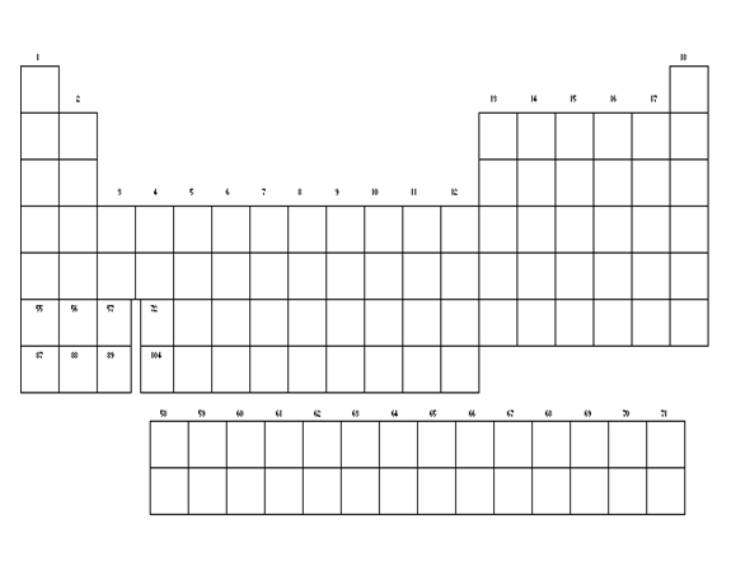
**LESSON 24: Electron Configurations**

26. What is the difference between an electron shell and an electron subshell?

27. How many subshells are possible for an atom?

28. a) What are the names of the four subshells?

b) How many electrons can each subshell hold?

29. Label the s, p, d, and f subshells below. Also, label the period numbers.

30. Write the full electron configurations for:

a) Al c) P

b) Cl d) Ni

31. Write the shorthand (noble gas) electron configuration for:

a) Br c) Rb

b) Ga d) Hg

32. Write the full electron configuration for S. How many main electron shells are in sulfur? How many electrons are in the third shell? How are they divided into subshells?